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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/506,722	09/07/2004	William F Walker	00756-03	4902

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UNIVERSITY OF VIRGINIA PATENT FOUNDATION
250 WEST MAIN STREET, SUITE 300
CHARLOTTESVILLE, VA 22902

EXAMINER

LARYEA, LAWRENCE N

ART UNIT	PAPER NUMBER
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3768

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/09/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

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Office Action Summary	Application No. 10/506,722	Applicant(s) WALKER ET AL.	
	Examiner Lawrence N. Laryea	Art Unit 3768	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-48 is/are pending in the application.
 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-48 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 September 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>04/04/2006</u> | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1,2,4-9,11-17,20-30,34-37 and 45-47: are rejected under 35

U.S.C. 102(e) as being anticipated by **Quistgaard et al (Patent 6962566)**.

3. Re Claims 1,2,4 and 17: **Quistgaard et al** teach an ultrasonic imaging system capable of producing C-Mode images and/or collecting 3D image data of a target (**See Col. 7, line 64-67; Col. 8, line 1-3 and Col.17 , line 46-48**) said system comprising: a housing; a transducer array disposed on said housing(**See Col. 2, line 30-32, Col. 5, line 66-67 and Col. 6, line 1-2**), a display unit disposed on said housing (**104**) wherein said transducer and said display unit is integrated with the housing (**See Fig.1 and See Col. 7, line 23-31**) and a beamformer in communication with said system (**See Col. 2, line 8-38**).

4. Re Claims 4 , 5,11,12 and 17: **Quistgaard et al** teach an ultrasonic imaging system wherein said display unit is adjustably mounted to said housing (**See Col. 6, line 56-58**).

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5. Re Claims 6 and 7: **Quistgaard et al** teach an ultrasonic imaging system wherein said system weighs less than about 5 pounds (**See Col. 2, line 30-31**).
6. Re Claims 13, 14, and 15: **Quistgaard et al** teach an ultrasonic imaging system wherein said display unit is adapted for displaying an image, said image displayed on said display unit is scaled in a manner that magnifies and corresponds with dimensions of the target the dimensions of the target (**See Fig 1; units 132,134,136,30,120 and 110**) and a user control unit (**See Col. 6, line 39-50, Col. 8, line 31-34**).
7. Re Claims 20, and 24-27: **Quistgaard et al** teach an ultrasonic imaging system wherein said display unit is adapted for displaying an image, said image displayed is formed by averaging at least two envelope detected images from multiple parallel planes, whereby appearance of speckle in the displayed image is reduced (**See Col. 7, line 45-55, Col. 10, line 48-67; Col. 11, line 1-46 and Figures 4,11 and 12**).
8. Re Claim 21-23: **Quistgaard et al** teach an ultrasonic imaging system wherein said display unit is adapted for displaying an image, said image displayed represents estimated blood flow velocities encoded in color (**See Col. 7, line 47-51, Power Doppler, Abstract line 1-4, Col. 7, line 16-23 and Col. 13, line 26-40**) and there is a video display for displaying acquired images and also depicts tissue harmonic information (**See Col. 13, line 26-40 and Figures 2 and 12**).
9. Re Claims 28 and 29: **Quistgaard et al** teach an ultrasonic imaging system wherein said transducer array transmits ultrasonic energy into the target wherein scanning conversion is used to acquire desire areas of the target (**See Col. 7, line 32-44 and Col. 10, line 4-47**).

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10. Re Claim 30: **Quistgaard et al** teach an ultrasonic imaging system wherein said transducer array transmits ultrasonic energy into the target, and said transducer array being responsive for receiving ultrasonic echo signals from the target, said transducer array using a coded excitation scheme to increase the effective signal to noise ratio of received echo signals (**See Col. 7, line 32-44**).

11. Re Claim 34: **Quistgaard et al** teach an ultrasonic imaging system wherein a marker unit is use for placing one or more marks on the target (**See Col. 8, line 5-8**).

12. Re Claim 45: **Quistgaard et al** teach an ultrasonic imaging system wherein the transducer array is curved (**See Col. 7, line 5-8**).

Claim Rejections - 35 USC § 103

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

14. Claims 3,10 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Quistgaard et al** in view of **Cheu et al (Patent 6139496)**.

15. Re claims 3,10,18 and 19: **Quistgaard et al** disclose an ultrasonic imaging system wherein a display unit and a transducer are used to acquire images and there is a video display for displaying acquired images and also depicts tissue harmonic information (**See Col. 7, line 5-8 and Col. 9, line 10-16 of Quistgaard et al**) but does

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not expressly disclose that the system is configured wherein a display unit lies in a plane substantially parallel or exactly parallel to transducer.

Cheu et al disclose an ultrasonic imaging system wherein a display unit lies in a plane substantially parallel or exactly parallel to transducer (**See Col. 10, Line 38-46**).

Also, **Cheu et al** disclose a transducer array made of piezoelectric materials such as lead Zirconate titanate (PZT).

It would have been obvious to one having ordinary skill in the art at the time invention was made to modify the ultrasonic imaging system of **Quistgaard et al** wherein the system is configured wherein a display unit lies in a plane substantially parallel or exactly parallel to transducer similar to that of **Cheu et al** in order to examine a desired area whilst the display unit displays the desired area the same time as taught by **Cheu et al**.

16. Claims 31-33,35 and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Quistgaard et al** in view of **Imran et al (Patent 6251073)**.

17. Re claims 31-33,35 and 48: **Quistgaard et al** disclose an ultrasonic imaging system capable of producing C-Mode images and/or collecting 3D image data of a target, said system comprising: a housing; a transducer, a display, a beamformer which are configured to correspond with a desired area but does not expressly disclose there is at least one passage in communication with said system wherein a needle or tool can be inserted into said passage and said location of said needle or tool is tracked and displayed on said display unit relative to said passage and that and the transducer comprises a plurality of piezoelectric material.

Imran et al disclose a miniaturized ultrasonic imaging system capable of producing images wherein disclose there is at least one passage (**recess**) in communication with said system wherein a needle or tool can be inserted into said passage and said location of said needle or tool is tracked and displayed on said display unit relative to said passage (**See Col. 10 Line 8-45 and Col.3 Line 28-32**) and the transducer has a plurality of piezoelectric material (**See Col. 3 Line 39-53**).

It would have been obvious to one having ordinary skill in the art at the time invention was made to modify the ultrasonic imaging system of **Quistgaard et al** wherein there is at least one passage (**recess**) in communication with said system wherein a needle or tool can be inserted into said passage and said location of said needle or tool is tracked and displayed on said display unit relative to said passage similar to that of **Imran et al** in order to perform variety of medical diagnostic procedures (**See Col. 2, line 21-23**) with the same portal medical apparatus and also the plurality of piezoelectric material are arranged to form specific arrays to provide a wide footprint which particularly useful for fetal monitoring or peripheral vascular diagnosis (**See Col. 1, line 60-64**) as taught by **Imran et al**.

18. Claims 8,9,38 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Quistgaard et al** in view of **Randell et al (Patent 6488625)**.

19. Re claims 8,9,38 and 39, **Quistgaard et al** disclose an ultrasonic imaging system wherein the system weighs less than 5 pounds but does not expressly disclose the system has a volume of less than about 4 and 48 cubic inches.

Randell et al disclose a portable medical diagnostic ultrasonic system where has a volume of less than about 4 and 48 cubic inches (**See Col. 35, Line 23-33 and Col. 35, Line 50-51**).

It would have been obvious to one having ordinary skill in the art at the time invention was made to modify the ultrasonic imaging system of **Quistgaard et al** wherein the portable medical diagnostic ultrasonic system where has a volume of less than about 4 and 48 cubic inches similar to that of **Randell et al** in order to make the system to be light or compact enough to be carry or move easily from place to place as taught by **Randell et al**.

20. Claims 40-42 and 43: are rejected under 35 U.S.C. 103(a) as being unpatentable over **Quistgaard et al** in view of **Thorne et al (Patent 5549708)**.

21. Re claims 40-42 and 43: **Quistgaard et al** disclose an ultrasonic imaging system for producing medical images but does not expressly disclose the system comprises a removable cover, intakes, one adhesive device, at least one said cover at least partially covering said housing .

Thorne et al disclose a medical system comprises a removable cover, one adhesive device, at least one said cover at least partially covering said housing (**See Col. 8, Line 51-63 and Col. 8, Line 51-63**).

It would have been obvious to one having ordinary skill in the art at the time invention was made to modify the ultrasonic imaging system of **Quistgaard et al** wherein a medical system comprises a removable cover, one adhesive device, at least

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one said cover at least partially covering said housing similar to that of **Thorne et al** in order to protect ultrasonic imaging system from damages.

22. Applicant has not disclosed that “ at least one said adhesive device at least partially disposed on said cover, at least one intake disposed on said cover, said intake allowing access through said cover, and at least one said adhesive device at least partially covering said housing” provides an advantage, is used for a particular purpose, or solves a stated problem. One of ordinary skill in the art, furthermore, would have expected the ultrasonic imaging system of **Quistgaard et al** as modified, and applicant’s invention, to perform equally well with or without at least one said adhesive device at least partially disposed on said cover, at least one intake disposed on said cover, said intake allowing access through said cover, and at least one said adhesive device at least partially covering said housing , would perform or yield the same function of producing images for medical analysis.

Therefore, it would have been prima facie obvious to modify **Quistgaard et al** to obtain the same method as specified in claims 40-42 and 43 because such a modification would have been considered a mere design consideration which fails to patentably distinguish over the prior art of **Quistgaard et al**.

23. Claims 44 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Quistgaard et al** in view of **Ascher et al (Patent 4596256)**.

24. Re claims 44: **Quistgaard et al** disclose an ultrasonic imaging system for producing medical images but does not expressly disclose that there is at least one said retaining device at least partially disposed on said housing.

Ascher et al disclose a medical device wherein there is at least one retaining device, at least one said retaining device at least partially disposed on said housing (See Col. 2, Line 65-68).

It would have been obvious to one having ordinary skill in the art at the time invention was made to modify the ultrasonic imaging system of **Quistgaard et al** wherein the medical system comprises at least one retaining device, at least one said retaining device at least partially disposed on said housing similar to that of **Ascher et al** in order to give the user a firm grip to the system and also to protect the ultrasonic imaging system from dropping to undesired places during medical examination.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Pelissier (Patent 6325759) discloses an ultrasonic imaging system wherein a display unit lies in a plane substantially parallel or exactly parallel to the transducer array.

Poland et al (Patent 7141020) disclose an ultrasonic imaging system for producing 3D images wherein an envelope detector is used to analysis the signals received from the ultrasound transducer.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lawrence N. Laryea whose telephone number is 571-272-9060. The examiner can normally be reached on 9:30 a.m.-5:30 p.m. EST.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eleni Mantis-Mercader can be reached on 571-272-4740. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

LNL

Eleni Mantis-Mercader
Eleni Mantis-Mercader
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